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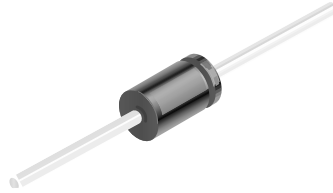
ON Semiconductor®

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BAV19 / 20 / 21



DO-35

Color Band Denotes Cathode

Small Signal Diode

Absolute Maximum Ratings*

$T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|-------------|--|--------------|------------------|
| V_{RRM} | Maximum Repetitive Reverse Voltage | BAV19 | 120 V |
| | | BAV20 | 200 V |
| | | BAV21 | 250 V |
| $I_{F(AV)}$ | Average Rectified Forward Current | 200 | mA |
| I_{FSM} | Non-repetitive Peak Forward Surge Current Pulse Width = 1.0 second Pulse Width = 1.0 microsecond | 1.0 | A |
| | | 4.0 | A |
| T_{stg} | Storage Temperature Range | -65 to +200 | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature | 175 | $^\circ\text{C}$ |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 200 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

| Symbol | Parameter | Value | Units |
|-----------------|---|-------|---------------------------|
| P_D | Power Dissipation | 500 | mW |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 300 | $^\circ\text{C}/\text{W}$ |

Electrical Characteristics

$T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|--------------|--|---|-----|------|---------------|
| V_R | Breakdown Voltage | BAV19 $I_R = 100 \mu\text{A}$ | 120 | | V |
| | | BAV20 $I_R = 100 \mu\text{A}$ | 200 | | V |
| | | BAV21 $I_R = 100 \mu\text{A}$ | 250 | | V |
| V_F | Forward Voltage | $I_F = 100 \text{ mA}$ | | 1.0 | V |
| | | $I_F = 200 \text{ mA}$ | | 1.25 | V |
| I_R | Reverse Current | $V_R = 100 \text{ V}$ | | 100 | nA |
| | | BAV19 $V_R = 100 \text{ V}, T_A = 150^\circ\text{C}$ | | 100 | μA |
| | | $V_R = 150 \text{ V}$ | | 100 | nA |
| | | BAV20 $V_R = 150 \text{ V}, T_A = 150^\circ\text{C}$ | | 100 | μA |
| | | $V_R = 200 \text{ V}$ | | 100 | nA |
| BAV21 | $V_R = 200 \text{ V}, T_A = 150^\circ\text{C}$ | | | 100 | μA |
| | | | | | |
| C_T | Total Capacitance | $V_R = 0, f = 1.0 \text{ MHz}$ | | 5.0 | pF |
| t_{rr} | Reverse Recovery Time | $I_F = I_R = 30 \text{ mA}, I_{RR} = 3.0 \text{ mA}, R_L = 100\Omega$ | | 50 | ns |

Typical Characteristics

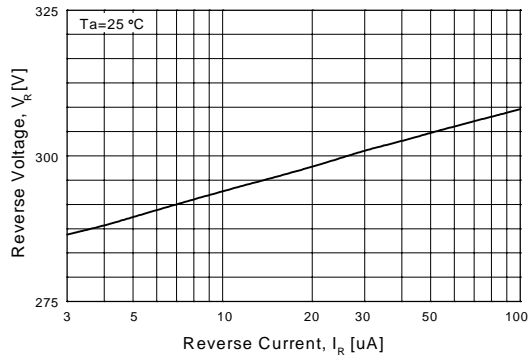


Figure 1. Reverse Voltage vs Reverse Current
BV - 1.0 to 100uA

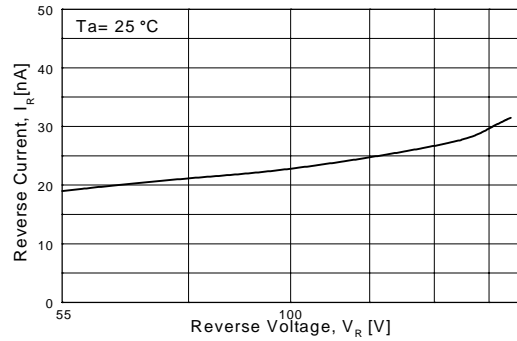


Figure 2. Reverse Current vs Reverse Voltage
IR - 55 to 205 V
GENERAL RULE: The Reverse Current of a diode will approximately double for every ten (10) Degree C increase in Temperature

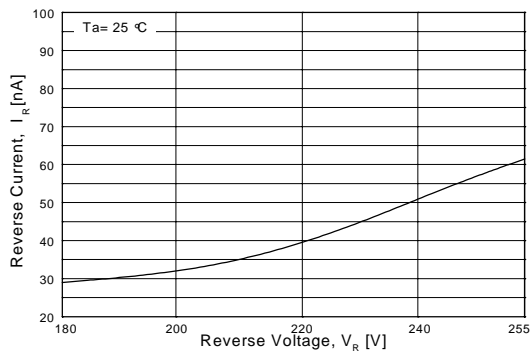


Figure 3. Reverse Current vs Reverse Voltage
IR - 180 to 225 V
GENERAL RULE: The Reverse Current of a diode will approximately double for every ten (10) Degree C increase in Temperature

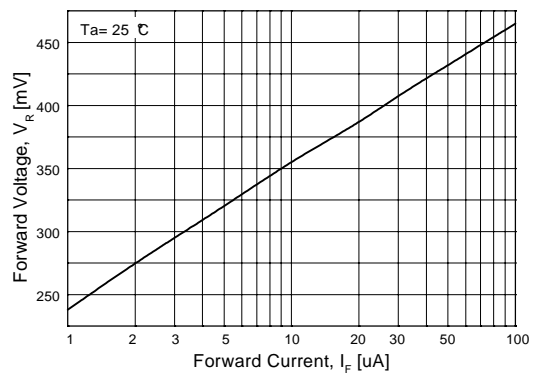


Figure 4. Forward Voltage vs Forward Current
VF - 1.0 to 100uA

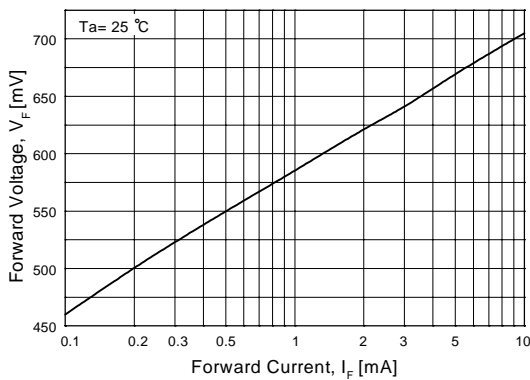


Figure 5. Forward Voltage vs Forward Current
VF - 0.1 to 10mA

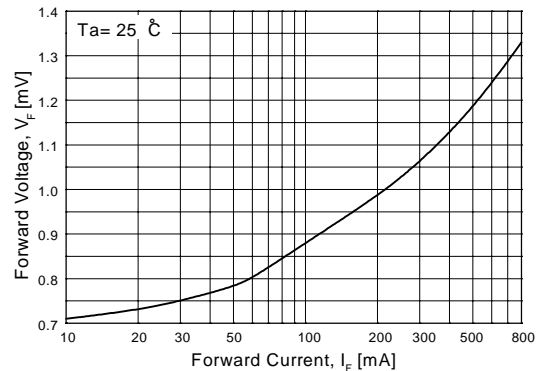


Figure 6. Forward Voltage vs Forward Current
VF - 10 to 800mA

Typical Characteristics (continued)

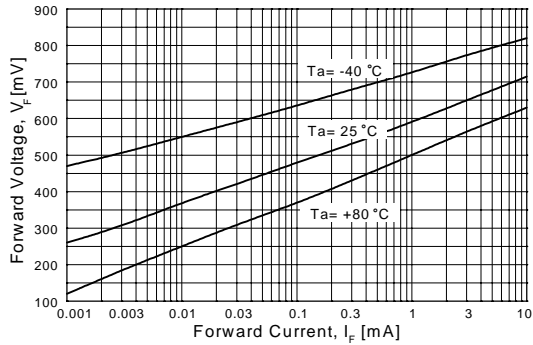


Figure 7. Forward Voltage vs Ambient Temperature
VF - 1.0 uA - 10 mA (-40 to +80 Deg C)

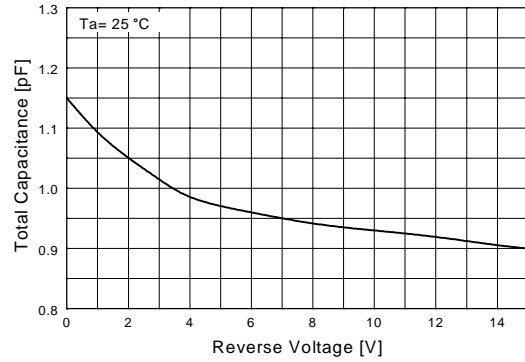


Figure 8. Total Capacitance

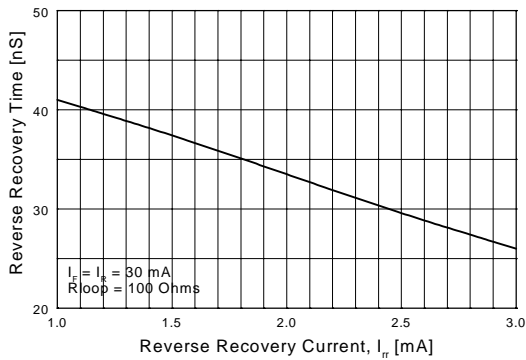


Figure 9. Reverse Recovery Time vs Reverse Recovery Current

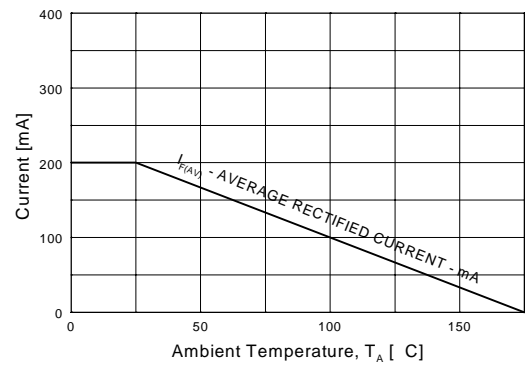


Figure 10. Average Rectified Current ($I_{F(AV)}$) versus Ambient Temperature (T_A)

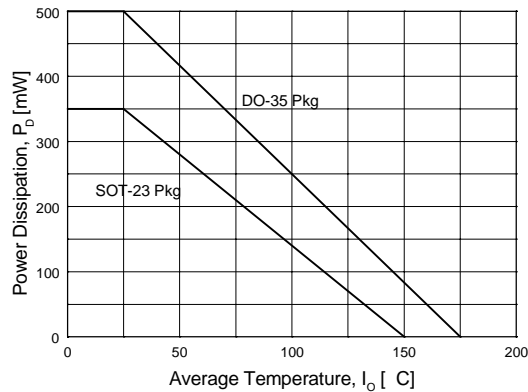


Figure 11. Power Derating Curve

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